DEQ/EPA Cost Meeting Notes

Conference Call
January 28, 2016

Participants:

Sean Sheldrake, EPA
Kevin Parrett, DEQ
Sarah Greenfield, DEQ
Gary Hazen, CDM Smith
Scott Coffey, CDM Smith

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The meeting began at 1:30pm.

Sean introduced the discussion purpose stating that Cami has asked us (EPA) to look at DEQ concerns over cost and identify what unit costs are at issue. Sean pointed out that because DEQ has raised these concerns, EPA has found some soft spots on the unit costs that are being looked into.

Kevin: DEQ wants to reduce costs as much as possible, but provide an effective remedy; DEQ wants to explore areas where costs can be reduced legitimately for instance does one need to dredge to 15 feet for effectiveness? DEQ wants to make sure costs aren't over, or under estimated.

Kevin pointed out DEQ has heard from LWG that costs will be far more than what EPA estimates. DEQ needs to be in a position to report back to delegates what they feel is accurate and have confidence that the costs are accurate. Sarah will work with State contractor to look into certain aspects of the costs where these costs may have been in error.

Scott and Gary: Commented that a table was being developed for Alternative E to show a comprehensive summary of our unit quantities/cost assumptions as well as rank major cost drivers and highlight where adjustments might be considered that could reduce costs.

The meeting continued by walking through DEQ's comments to the NRRB and addressing these comments based on the talking points developed to address the comment. **NOTE: The entire DEQ comment to the NRRB is provided. This is followed by excerpted portions of the drafted EPA talking point developed for an internal EPA meeting on January 20th, followed by the discussion that occurred on that comment topic during the call.**

DEQ Comment: There are significant differences between the Lower Willamette Group (LWG) and EPA cost estimates for the remedial alternatives identified in the FS. The State encourages the NRRB and CSTAG to assess the reasons for these substantial differences, and to look for ways that EPA can reduce costs without undermining the protectiveness and overall feasibility of the remedy. The State is concerned that potentially liable parties will choose to litigate rather than implement a remedy that is too

expensive or based on an estimate that is not transparent and that does not accurately reflect the true costs of the preferred remedy.

The cost estimate should neither underestimate nor overestimate the true cost of the remedy and it should clearly identify costs that have been estimated for contingencies and long-term monitoring and maintenance activities.

Draft EPA Talking Point: The stated purpose for FS cost estimates in EPA's "A Guide to Developing and Documenting Cost Estimates During the FS" (EPA 2000) is to compare remedial alternatives during the remedy selection process, not for establishing project budgets or negotiating Superfund enforcement settlements. The stated accuracy in this guidance for FS cost estimates at the detailed analysis phase is +50% to -30% of actual cost. EPA's position is that the cost methodology and sources used in the FS meet the stated accuracy range. Since the NRRB, EPA has reviewed comments pertaining to cost estimates and is making changes to assumptions for all alternatives and updating the cost estimates, as appropriate, to reflect the anticipated scope of a future remedy for the Portland Harbor Superfund Sites. For instance, EPA is reviewing assumptions pertaining to in-water structures for consistency with early actions and is also reviewing unit costs for active technology components such as capping and dredging to reflect consistency with the increased productivity rates anticipated in EPA's evaluations. However at this phase of the evaluation, EPA is not attempting to develop cost estimates beyond what is required at the FS phase of evaluation. In addition, EPA followed FS cost estimating guidance pertaining to presentation of contingency and long-term monitoring and maintenance activities which were itemized in the estimates; EPA disagrees that these costs were not clearly identified in EPA's estimates.

EPA has developed a "Pareto 10" list of direct cost line items representing cost drivers for each alternative (see attachment) to help identify assumptions that could represent the biggest impacts to underestimation or overestimation of "true" costs.

Meeting Discussion on this Topic:

Gary: Provides overview of talking point.

Gary: It is not clear what particular items DEQ feels are underestimated, but if they are going to perform independent estimates for comparison they should considered that EPA FS cost guidance is a simplified approach for comparing alternatives so factors considered during funding of construction such as inflation, a realistic discount (interest) rate, and construction scheduling are simplified or absent depending on the guidance.

Gary: The "Pareto 10" list will identify major cost drivers; based on the development to date most of the drivers are similar between alternatives but the order varies some based on the scope of the alternatives (e.g. Subtitle C disposal costs are a more important driver for Alternative B than G, where there is a larger volume of overall dredged sediment disposed).

Kevin: DEQ wants to key in on alternative E or the preferred alternative, not all of the alternatives in the FS.

Gary: pointed out the FS process and the FS accuracy range of +50%/-30% and the decision to utilize LWG unit costs that were deemed reasonable. Gary also noted that there is a recognition that certain unit costs are not matching up with updates to the selected remedy (e.g. productivity assumptions) and that we are looking into revising these specific unit costs.

Gary: explained the context of contingency used in the FS per guidance; Contingency in the FS addressed scope contingency (unknown or unforeseen changes to the scope of the alternative) and bid contingency (unknown or unforeseen changes during bid and construction such as market changes for material costs, etc.)

Kevin: was referring to contingency in two ways; contingent remedy and contingent costs. Understands that EPA will not propose a contingent remedy. Such as a situation where a RAL was not being met and EPA would invoke a contingent remedy.

Kevin: wants to see contingency costs clearly pointed out. For example, here is the base cost; with contingency;

Gary: pointed out that this is in the worksheet – separate and distinct.

Sean: For sake of time that the group may need to circle back to this topic and move on.

Kevin ended the discussion this by stating that he thinks 30% may not be appropriate for a massive construction project like this. Wants us to think about it.

Gary: Good concern, guidance doesn't specify a set percentage. There are ranges for each of these to be considered per guidance but not a set contingency percentage. It is a legitimate discussion point given the large overall costs.

Kevin: "I'm not an engineer so I can say crazy things." Mobilization costs seem inappropriately high.

Sean: We'll come back to this.

DEQ Comment:

Moreover, the State requests that the NRRB and CSTAG consider whether the following refinements of remedial alternatives could substantially reduce costs while not decreasing overall protectiveness and feasibility:

- Eliminate ex situ treatment of principal threat waste unless required by RCRA/TSCA.

Draft EPA Talking Point: EPA is currently reviewing and updating the disposal decision tree (flowchart) used to determine evaluation of treatment within the FS; however revisions to that disposal decision tree are minor and will not change the determination of what is considered PTW or what requires treatment. EPA is reviewing information pertaining to ex-situ treatment that was developed during early actions, particularly from GASCO/Siltronics, that could affect cost estimate assumptions related to the type of treatment approach assumed. Current FS cost estimate assumptions for ex situ treatment that MGP wastes are the only significant category of PTW assumed to incur treatment that is not otherwise required under ARARs; however the acreage of this category of PTW is 5 acres and 13,300 cubic yards. The related cost of ex situ treatment for this PTW is approximately $23 million.

Meeting Discussion on this Topic:

Gary: Provides overview of talking point.

Sean: Indicates that the assumption of thermal treatment resulted in high costs and may not be necessary. Forcing this issue with Gasco; that what was done on Gasco tar body was sufficient; No need for formal treatment. Using quicklime remains a worker/safety issue, not a viability issue.

Kevin: If quicklime is used over thermal treatment; question still remains if it goes to Subtitle C. Would it still go as hazardous waste?

Sean: Subtitle D facilities are generally not equipped to deal with hazardous constituents from the aspects of decon/handling/worker protection so is a hurdle for use of those facilities. Safety aspects would need to be tightened up to remove this assumption to have it go to Subtitle D.

Sean: Are State contained in determination assumptions realistic? This is a State call.

Kevin: Thinks Contained-In determination shouldn't be a problem. Two sources of approval: Source of approval from cleanup program is easy and fast tracked; ultimate determination takes longer.

Gary: Points out that current assumption for FS is there is a reasonable expectation that contained-in determination will be made eventually; EPA currently assumes that the "reliably contained" PTW such as pesticide or low level PCB wastes without NRC/NAPL constituents are assumed to go to Subtitle D without treatment assuming a contained-in determination. DEQ provided concurrence to this.

Kevin: Recognizes this is a tangent to this topic, but points out concern about overuse of highway system. Can't imagine transport would be done by road and wonders if there is an assumption that can be made to help lock cost estimates to receiving areas (landfills) only accessible by rail or barge and not highway and these sites alleviate the concerns over hazardous waste.

Gary: Points out that EPA retained a number of transportation methods in the FS for moving wastes to disposal facilities and has not limited a future choice or combination of methods. Methods would be chosen during construction to achieve not only cost savings but other goals. For cost purposes CDM Smith contacted the representative disposal facilities for transportation costs and that they not only

indicated the unit costs for transport but that they felt that they could not provide a budgetary quote for other combinations of transport at this time that would result in lower costs than what they indicated.

DEQ Comment: Eliminate cap amendments even for principal threat waste (except in NAPL areas) unless they are determined to be necessary during remedial design (i.e., defer this determination to RD).

Draft EPA Talking Point: Cap amendments were generally only assumed to be applied (through the technology assignment flowcharts) to NRC/NAPL PTW capped in situ. DEQ indicates this assumption should not be changed for NAPL PTW. EPA did not parse out NAPL PTW from NRC PTW in alternative development due to co-location and lack of extensive delineation data. Since NAPL PTW would likely require cap amendments to provide protectiveness, the assumption of cap amendments was retained. Cap amendments were also assigned to areas of contaminated groundwater influx. However the total acreage for cap amendments ranges from 21.3 acres (Alternative B) to 94.7 acres (Alternative G) and the related cost range of in situ treatment using cap amendments is approximately $15 million (Alternative B) to $67 million (Alternative G). This would not result in a substantial reduction of costs as indicated by DEQ.

Meeting Discussion on this Topic:

Gary: Provides overview of talking point.

Kevin: Recognizes there is a need for addressing NRC/NAPL areas with reactive materials, but DEQ doesn't feel Arkema has NAPL based on the data. DEQ thinks this is a cost driver that could be reduced. DEQ proposes EPA assume it is not NAPL. Document this assumption as Arkema's position and have it bear itself out in the design phase.

Sean: Thinks we should dig into how much of the area/cost is from Arkema to really see how much of a cost driver this is.

Kevin: Recognize this one may not be a big one, but small ones add up to a large cost.

Gary: Reiterates the difficulty in separating quantities of co-located NRC from NAPL.

Action Item:

- Determine cost of addressing NRC/NAPL off Arkema site

DEQ Comment: Select enhanced monitored natural attenuation (EMNR) as a contingency measure for Swan Island Lagoon instead of a primary element of the remedy. Consider other opportunities for continent remedies.

Draft EPA Talking Point: EMNR was not identified as a primary element of alternatives for Swan Island Lagoon but rather considered holistically with other technologies such as capping and dredging as part of the technology assignment process using decision matrices. EPA presumes that DEQ is advocating for use of MNR rather than EMNR with Swan Island Lagoon. However it should be noted that hydrodynamic

conditions within Swan Island Lagoon are not favorable for MNR without enhancement. In addition, EMNR in Swan Island Lagoon ranges from 103 acres (Alternative B) to 14.5 acres (Alternative G). The key difference between EMNR and MNR is the placement of a layer of sand, a relatively inexpensive material). Costs for the EMNR sand placement layer for Swan Island Lagoon represents $7 million (Alternative B) to $1 million (Alternative G) due to increasing acreage of other technology assignments such as capping and dredging. Change from EMNR to MNR would not result in a substantial reduction of costs as indicated by DEQ.

Meeting Discussion on this Topic:

Gary: Provides overview of talking point.

Kevin: Agrees not a big item after hearing the talking point information presented by Gary,

DEQ Comment: Reduce the physical isolation layer for sediment caps to the more traditional thickness of two feet unless a thicker layer is determined to be necessary during remedial design (i.e., defer this determination to RD).

Draft EPA Talking Point: The physical isolation layers for the majority of sediment caps are already assumed in FS alternatives to be two feet or less in thickness, usually substantially less than two feet. In the less prevalent instances where they are assumed to be greater than two feet, it is due to factors such as presence of PTW that justify a greater thickness based on experience at this and other projects. In addition, the material used for physical isolation layers (sand) is a low cost material. The locations where the physical isolation layers are 3 feet in thickness are 7 acres (Alternative B) to 142 acres (Alternative G). The incremental cost increases for thickness of physical isolation layers beyond 2 feet ranges from ranges from $746,000 (Alternative B) to $15.8M (Alternative G). This would not result in a substantial reduction of costs as indicated by DEQ.

Meeting Discussion on this Topic:

Gary: Provides overview of talking point.

Kevin: Questioning the extra benefit of sand; Based on his understanding of the composition of this sourced sand, it will be very coarse, not likely to reduce flux, or prevent erosion. Wants to know why this extra amount is needed. Not clear why. Wants to follow up on this concern.

DEQ Comment: Reduce reliance on dredging in "Intermediate Areas" unless there is a clear impact on beneficial uses of the Harbor and perhaps defer this determination to RD.

Draft EPA Talking Point: Generally there is more capping than dredging assigned to intermediate areas due to the conditions considered by the evaluation factors in technology assignment. Dredging in intermediate areas ranges from 94,000 cubic yards (Alternative B) through 221,000 cubic yards (Alternative G) using neat volumes Costs for capping in intermediate

areas represent $31,9M (Alternative B) through $109.3M (Alternative G). Costs for dredging where capping was not assigned in intermediate areas represent $121.2M (Alternative B) through $178.1 (Alternative G) using overdredge volumes. The costs could be a potential cost driver, but it is deemed necessary to provide appropriate protectiveness.

Where dredging is assigned in the intermediate area, conditions considered by the evaluation factors are not amenable to caps that would maintain effectiveness and permanence. These assumptions can be refined during remedial design of a remedy based on new information collected during pre-design investigations.

Meeting Discussion on this Topic:

Gary: Provides overview of talking point.

Kevin: This topic is less of an issue now as it is now known that the figure in FS when presented last fall to the NRRB was in error; showing all of the immediate areas being dredged. Would like to know the acres designated for dredging? Dredge to cap ratio?

Gary and Scott: Assignment of capping versus dredging consider other factors such as hydrodynamic conditions and PTW so dredging was assigned where it was reasonable to assume that caps may not have effectiveness or permanence.

Kevin: What is assumed for mitigation costs?

Sean: This is something we're looking into with our deep dive on costs and they may be on the high side and could be reduced.

Gary: Points out that technique used for costing this (specific analogy) involves taking a known cost from another project of similar scope (in this case lower Duwamish) and applying it to this project, so is valid to consider the differing market conditions between Seattle and Portland.

Kevin: DEQ recommends using market rates for the Alder Creek mitigation cost. Assumes they have an advertised mitigation cost/acre and they would be lower.

Sean: Points out that Alder Creek cannot be used as a mitigation bank because they refused to participate in the (IRT?) process. However EPA can look into whether costs from it could be considered.

Kevin: points out the need to have flexibility. FS technology assignment seems to be rigidly applied and can only be flexible in the intermediate area because the Navigation Channel can't have caps and there are fish habitat issues with caps in the shallow zones, so the only place PRPs have real flexibility is in the intermediate zone. Also dredging in intermediate areas may not be all that feasible because outside of the navigation channel there are significant amounts of in-water debris that could hamper dredging. DEQ would propose to assume the less costly cap option for the majority of the intermediate area, over assigning dredging and then let the design phase define what should be done in this area.

Action item:

- Determine acres of cap vs acres of dredge in intermediate areas.
- Develop a figure showing the location of these dredge areas in the intermediate areas

DEQ Comment: Set the maximum dredged depth to be more dependent on vertical contamination trends and consideration of incremental reduction in overall contaminant mass rather than a fixed maximum dredge depth of 15 feet as specified in EPA's draft FS. Also, switch to an engineered cap instead of dredging if removal does not substantial reduce contaminant mass. Possibly defer this determination to RD.

Draft EPA Talking Point: Contaminant trends were considered in the development of dredging depths. Dredging is generally assigned rather than capping because conditions considered by the evaluation factors in technology assignment are not amenable to caps that would maintain effectiveness and permanence. Dredging deeper than 15 feet results in quantities ranging from 2.5 acres and 22,000 cubic yards using neat volumes (Alternative B) through 10.3 acres and 73,000 cubic yards using neat volumes (Alternative G). Costs for dredging deeper than 15 feet represents $31.7M (Alternative B) through $71.7M (Alternative G) using overdredge volumes. These costs could be a potential cost driver, but it is deemed necessary for the technology assignment to provide appropriate protectiveness.

Dredging is also assigned to NAPL PTW, but contaminants associated with NAPL PTW are difficult to reliably contain and they are generally of limited extent which would not result in substantial cost reductions if assignment was switched to capping. These assumptions can be refined during remedial design of a remedy based on new information collected during pre-design investigations.

Meeting Discussion on this Topic:

Gary and Scott: Provide overview of talking point.

Kevin: This helps.

DEQ Comment: Incorporate some level of flexibility during remedial design to switch between capping and dredging depending on the amount of debris, nature of docking and other structures, steepness of bed slopes and size of the designated cap or dredge area.

Draft EPA Talking Point: EPA has always maintained that the remedial alternatives described in the FS is not a rigid prescription for ultimate remedial design and that flexibility during remedial design will need to be considered for assignment between capping and dredging due to many factors. Many of the evaluation factors indicated by DEQ are already considered in technology assignment. These assumptions will likely be refined during remedial design of a remedy based on new information collected during pre-design investigations.

Meeting Discussion on this Topic:

Gary and Scott: Provide overview of talking point.

Kevin: Restates that EPA should reconsider requirements of dredging in the intermediate area. Allow flexibility for capping or dredging unless other factors over-ride this flexibility. Cost for the FS would be based on the less conservative option (whether that's caps, or other).

Scott: Points out that the assignment of dredging over capping is based on multiple hydrodynamic factors, not just location specific factors.

Kevin: Points out that success in complete removal of the mass should be considered in determining whether you need to cap or dredge. If you can't dredge it all out then what's the benefit of dredging over capping since your leaving mass in there.

Action Item:

- Show DEQ the distribution of capping in the intermediate vs the dredging and the costs differences.

DEQ Comment: Incorporate less aggressive PAH Remedial Action Levels (RALs) in navigational areas where direct exposure to this non-bio-accumulative contaminant is less likely.

Draft EPA Talking Point: EPA has evaluated a range of PAH RALs in the development of Alternatives B through G. The determination of a less restrictive PAH RAL for navigational areas can be refined during remedial design of a remedy based on new information collected during pre-design investigations.

Meeting Discussion on this Topic:

Kevin: I am aware that EPA has looked at ranges for this so no need to discuss further at this time.

DEQ Comment: Refine GIS mapping where there appear to be anomalies that overestimate the size of the sediment management areas. We note that EPA's contaminant distribution maps show much larger areas of contamination than the corresponding LWG maps. EPA should compare its GIS interpolation protocol to the LWG's process detailed in Appendix E Chap 5 of their draft FS. We also encourage EPA to work with the LWG in solving this relatively simple technical difference.

Draft EPA Talking Point: Although anomalies do exist due to lack of data density, they are generally localized and thus represent small additional quantities that would not result in substantial cost reductions as indicated by DEQ. In addition to the overestimation bias from anomalies that DEQ focused on in the comment, there is also underestimation bias inherent to the interpolation methodology that generally offsets overestimation on a pixel scale. The methodology used by EPA is fundamentally similar to that used by LWG. Differences in methodology between EPA and LWG pertain to the list of contaminants

used in the analysis. Anomalies can be refined during remedial design of a remedy based on new information collected during pre-design investigations.

Meeting Discussion on this Topic:

Scott: Provides overview of talking point.

Kevin: LWG did more smoothing; DEQ doesn't see this smoothing process in EPA's mapping.

Scott: The smoothing process was conducted initially, but the additional technology assignment categories made this smoothing process less necessary with the breakout of the more detailed technology assignment coverage.

Kevin: Still concerned about the mapping anomalies and explained an example around RM 10.5 Union pacific; Decent data density; suspects natural neighbor is extrapolating data too much in this area and overestimating remedy area. Suggests EPA look into these areas and manually mark out the pixels that aren't reliably (inaccurately) showing RAL exceedences. Look into these areas and apply an overlay. Realizes this is labor intensive, but could be reduced by focusing only on Alt E.

State Proprietary Authorization of Remedial Action and Impacts of Capping Large Areas of Sediment

DEQ Comment: The State is concerned about the potential significant impact of the remedial action on public trust resources of the state-owned submerged and submersible land that largely comprises the Portland Harbor. To the extent public trust values are significantly impacted by the remedy, compensation and/or mitigation is required.

Engineered caps, in particular, should be limited and designed (e.g., location, thickness, material, etc.) in a manner that minimizes the impact to public trust uses and that will require less compensation to the State.

Draft EPA Talking Point: EPA made assumptions for engineered caps to limit the need for mitigation and/or compensation as part of compliance with ARARs, particularly Federal CWA 404 regulations. EPA is currently reviewing comments provided by the NRRB/CSTAG pertaining to mitigation to determine whether there are additional opportunities to make minor modifications to cost estimate assumptions to further reduce costs assumed for compensation that may be required where cap assumptions do not fully address habitat concerns.

Meeting Discussion on this Topic:

Gary: Provides overview of talking point.

Kevin: Off topic, but another big piece of this is the ICs; Sarah will be working with DSL in doing the independent investigation; Is EPA going to incorporate the DSL land lease cost?

Sean: Addresses that this is a complex cost that goes into too much specifics and legal issues that take significant time. In particular presenting these costs now in the FS may present legal issues for parties adjacent to in water work, particularly some innocent parties along the river.

Gary: These costs are problematic to assess in the FS; EPA looked at these early on. Oregon regulations provide a lease rate but that results in incredibly large costs not already included in alternative cost estimates. While purchase costs may result in lower costs than leasing, the regulations do not stipulate a cost to be used that can be easily incorporated.

Kevin: When this was teed up with EPA counsel it was not characterized well to DEQ, just a response that it's not an ARAR thing to include the DSL land lease costs. DEQ feels that while it may not technically be an ARAR, the DSL land lease requirements are a State regulation and thus a real cost and concern.

Kevin: Appreciated Sean's explanation for its exclusion due to the complex web of characterizing these costs in a manner that shows the complexity regarding other land holders along the river and not simply an ARAR exclusion issue

Next Steps:

Develop information related to Action Items (identified above) summarized as follows:

DEQ

- Determine whether they want to address the contained-in determination issue now or later
- Sarah to meet Sean/CDM Smith after they have time to do their own independent review of specific cost concerns regarding unit costs or cost items that may have been left out. This will be in next couple of weeks.

EPA/CDM Smith

- Determine cost of addressing NRC/NAPL off Arkema site
- Determine acres of cap vs acres of dredge in intermediate areas.
- Provide figure showing the location of these dredge areas in the intermediate zone
- Show DEQ the costs difference between capping vs the currently designated dredging in the intermediate zone.

Set up another call next Friday (February 5) with DEQ (Kevin and Sarah) to discuss information developed from action items and EPA table (currently being developed) summarizing unit quantities/cost assumptions and main cost drivers.

3:20 pm – Meeting adjourns.